

WHAT IS CLAIMED IS:

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1 An optical scanning device comprising:
a plurality of scanning optical systems
arranged in a main scanning direction,
the scanning optical systems each
10 comprising:
a plurality of light sources emitting
light beams;
a light source driving circuit
modulating the emitted light beams separately; and
15 a deflector causing the light beams to
perform scanning,
wherein at least one of the scanning optical
systems comprises a light source selection part
selecting one of said light sources of the one of the
20 scanning optical systems.

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2. The optical scanning device as claimed

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in claim 1, wherein said light source driving circuit comprises a function of correcting a modulation frequency for each of the light beams.

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3. The optical scanning device as claimed in claim 1, wherein:

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the scanning optical systems include first and second scanning optical systems scanning first and second scanning areas adjacent to each other, respectively, the first scanning optical system comprising said light source selection part; and

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said light source selection part generates a light source selection signal and selects the one of the light sources which one is used for recording image information of a first line of the first scanning area.

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4. The optical scanning device as claimed in claim 3, wherein said light source selection part

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generates the light source selection signal based on a difference between recording start times of the first and second scanning optical systems and a scanning position deviation in a sub scanning direction between a scanning end position of the second scanning area and a corresponding scanning start position of the first scanning area.

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5. The optical scanning device as claimed in claim 4, wherein a time difference between synchronizing detection signals of the first and second scanning optical systems, respectively, is employed as the difference between the recording start times, the synchronizing detection signals being detected in the first and second scanning optical systems when the first and second scanning optical systems start scanning, respectively.

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6. The optical scanning device as claimed

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in claim 4, wherein the first scanning optical system further comprises a recording start time control part controlling a recording start time of the image information of the first line of the first scanning
5 area.

10 7. The optical scanning device as claimed in claim 6, wherein said recording start time control part generates a recording start time signal based on the scanning position deviation.

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8. The optical scanning device as claimed in claim 7, wherein said light source driving circuit
20 separately modulates the light beams based on the light source selection signal and the recording start time signal.

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9. The optical scanning device as claimed in claim 4, wherein the first scanning optical system further comprises a scanning position control part controlling the scanning position deviation.

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10. The optical scanning device as claimed in claim 9, wherein said scanning position control part turns a bending mirror of the first scanning optical system around an axis parallel to the main scanning direction.

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11. The optical scanning device as claimed in claim 4, wherein the scanning position deviation is obtained by measuring initial characteristics of the optical scanning device.

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12. The optical scanning device as claimed
in claim 4, wherein the scanning position deviation
is detected by a detector provided in the optical
scanning device.

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13. The optical scanning device as claimed
in claim 12, wherein the detector is a charge-coupled
device.

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14. The optical scanning device as claimed
in claim 3, wherein said light source selection part
generates the light source selection signal based on
an ideal time difference that is a period of time
required for matching a recording end position of the
second scanning area and a corresponding recording
start position of the first scanning area at an joint
of the first and second scanning areas

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15. The optical scanning device as claimed
in claim 14, wherein the ideal time difference is
obtained based on a difference between recording
start times of the first and second scanning optical
5 systems and a scanning position deviation in a sub
scanning direction between a scanning end position of
the second scanning area and a corresponding scanning
start position of the first scanning area.

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16. The optical scanning device as claimed
in claim 1, wherein:
15 the scanning optical systems include first
and second scanning optical systems scanning first
and second scanning areas adjacent to each other,
respectively; and

the first scanning optical system comprises
20 said light source selection part and a recording
start time control part controlling a recording start
time of image information of a first line of the
first scanning area.

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17. The optical scanning device as claimed
in claim 16, wherein said recording start time
control part generates a recording start time signal
based on a scanning position deviation in a sub
5 scanning direction between a scanning end position of
the second scanning area and a corresponding scanning
start position of the first scanning area.

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18. The optical scanning device as claimed
in claim 1, wherein:

the scanning optical systems include first
15 and second scanning optical systems scanning first
and second scanning areas adjacent to each other,
respectively; and

the first scanning optical system comprises
said light source selection part and a scanning
20 position control part controlling a scanning position
deviation in a sub scanning direction between a
scanning end position of the second scanning area and
a corresponding scanning start position of the first
scanning area.

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19 The optical scanning device as claimed
in claim 18, wherein said scanning position control
part turns a bending mirror of the first scanning
optical system around an axis parallel to the main
5 scanning direction.

10 20. An imaging apparatus including an
optical scanning device having a plurality of
scanning optical systems arranged in a main scanning
direction,

wherein:

15 the scanning optical systems each
comprises:

a plurality of light sources
emitting light beams;

a light source driving circuit
20 modulating the emitted light beams separately; and

a deflector causing the light
beams to perform scanning; and

at least one of the scanning optical
systems comprises a light source selection part
25 selecting one of said light sources of the one of the

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scanning optical systems.

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21. The imaging apparatus as claimed in claim 20, wherein said light source driving circuit comprises a function of correcting a modulation frequency for each of the light beams.

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22. The imaging apparatus as claimed in claim 20, wherein:

the scanning optical systems include first and second scanning optical systems scanning first and second scanning areas adjacent to each other, respectively, the first scanning optical system

20 comprising said light source selection part; and

said light source selection part generates a light source selection signal and selects the one of the light sources which one is used for recording image information of a first line of the first
25 scanning area.

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23. The imaging apparatus as claimed in claim 22, wherein said light source selection part generates the light source selection signal based on a difference between recording start times of the first and second scanning optical systems and a scanning position deviation in a sub scanning direction between a scanning end position of the second scanning area and a corresponding scanning start position of the first scanning area.

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24. The imaging apparatus as claimed in claim 20, wherein the one of the scanning optical systems which one comprises said light source selection part further comprises a recording start time control part controlling a recording start time of image information of a first line of a scanning area scanned by the one of the scanning optical systems.

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25. The imaging apparatus as claimed in claim 20, wherein:

the scanning optical systems include first and second scanning optical systems scanning first and second scanning areas adjacent to each other, respectively; and

the first scanning optical system comprises said light source selection part and a scanning position control part controlling a scanning position deviation in a sub scanning direction between a scanning end position of the second scanning area and a corresponding scanning start position of the first scanning area.

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26. An imaging method employing an optical scanning device including a plurality of scanning optical systems arranged in a main scanning direction, the imaging method comprising the steps of:

(a) generating a light source selection signal in at least one of the scanning optical systems to select one of light sources thereof, the one of the light sources being used for recording

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image information of a first line of a scanning area scanned by the one of the scanning optical systems;

(b) emitting light beams from the light sources in the one of the scanning optical systems, the light beams being modulated separately by a light source driving circuit of the one of the scanning optical systems; and

(c) performing scanning with the light beams being deflected by a deflector of the one of the scanning optical systems.

27. The imaging method as claimed in claim 26, further comprising the step of (d) correcting a modulation frequency for each of the light beams by the light source driving circuit.

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28. The imaging method as claimed in claim 26, wherein, in said step (a), the light source selection signal is generated based on a time

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difference between recording start times of the one and an adjacent one of the scanning optical systems and a scanning position deviation in a sub scanning direction between a scanning end position of a scanning area of the adjacent one of the scanning optical systems and a corresponding scanning start position of the scanning area of the one of the scanning optical systems, the scanning areas being adjacent to each other.

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29. The imaging method as claimed in claim 28, further comprising the step of (d) controlling a recording start time of the image information of the first line by generating a recording start time signal in the one of the scanning optical systems based on the scanning position deviation.

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30. The imaging method as claimed in claim 29, wherein the light source driving circuit

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modulates the light beams separately based on the light source selection signal and the recording start time signal.

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31. The imaging method as claimed in claim 28, wherein a time difference between synchronizing detection signals of the one and the adjacent one of the scanning optical systems, respectively, is employed as the difference between the recording start times, the synchronizing detection signals being detected in the one and the adjacent one of the scanning optical systems when the one and the adjacent one of the scanning optical systems start scanning, respectively.

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32. The imaging method as claimed in claim 28, wherein the scanning position deviation is obtained by measuring initial characteristics of the optical scanning device.

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38. The imaging method as claimed in claim
26, further comprising the step of (d) controlling
the scanning position deviation by turning a bending
mirror of the one of the scanning optical systems
5 about an axis parallel to the main scanning direction.